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ABSTRACT

The retention of older respondents in a longitudinal study is of important concern to data quality and representativeness of the target population. Participant non-response has been considered a more serious problem among older persons than among younger ones, since dropouts in longitudinal studies of older adults have been reported to be less healthy, more intellectually impaired, and of lower economic status than continuing respondents. There is concern that the sample of the continuing participants might be biased toward the more functional elderly and may lead researchers to underestimate the mental and physical needs of the general population of the aged. In this study, use of a carefully designed refusal conversion protocol at first follow-up in a longitudinal study of a representative sample of over 4,000 older persons was investigated. Respondents who refused initially did not differ from respondents by age or gender, but were more functionally independent, citing disinterest more frequently as the reason for refusal. The protocol was successful in convincing 43% of these initial refusals to continue participation, but less successful with proxy respondents (27% converted). The findings suggest that most refusals can be converted by telephone at minimal cost, and that it is possible to retain the very old and disabled in longitudinal studies given appropriate field methods. (Author/NB)

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REFUSAL RATES IN A LONGITUDINAL STUDY OF OLDER PEOPLE:
IMPLICATIONS FOR FIELD METHODS

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ABSTRACT

Use of a carefully designed refusal conversion protocol at first follow-up in a longitudinal study of a representative sample of over 4000 older people was investigated. Respondents who refused initially did not differ from respondents by age or gender, but were more functionally independent, citing disinterest most frequently as the reason for refusal. The protocol was successful in convincing 43% of these initial refusals to continued participation, but less successful with proxy respondents (27% converted). Most refusals can be converted by telephone at minimal cost. Results show that it is possible to retain the very old and disabled in longitudinal studies given appropriate field methods.

The retention of older respondents in a longitudinal study is of important concern to data quality and representativeness of the target population. Participant non-response has been considered a more serious problem among older persons than among younger age groups by many researchers (DeMaio, 1980; Hawkins, 1975; Lowe and McCormick, 1955; Mercer and Butler, 1967, 1968; Weaver, Holmes and Glenn, 1975), since dropouts in longitudinal studies of elders have been reported to be less healthy (Goudy, 1976; Norris, 1985; Powers and Bultena, 1972; Schaie, Labouvie, and Barrett, 1973; Siegler and Botwinick, 1979; Streib, 1966), more intellectually impaired (Goudy, 1976; Norris, 1985; Powers and Bultena, 1972; Schaie, Labouvie, and Barrett, 1973; Siegler and Botwinick, 1979) and of lower economic status (Goudy, 1976; Powers and Bultena, 1972; Streib, 1966) than continuing respondents. Thus, the sample of the continuing respondents might be biased towards the more functional elderly and may lead researchers to underestimate the mental and physical needs of the general population of the aged (Norris, 1985).

In addition to respondent characteristics, the specific study methodology may also be associated with and contribute to participant non-response. For example, higher refusal rates have been reported for the elderly in telephone surveys, particularly those using the random-digit-dial method (Herzog et al., 1983; Herzog and Rodgers, 1988a). With this mode, however, a higher refusal rate may actually reflect an inability to participate, e.g., due to hearing impairment, rather than respondent disinterest (Tennstedt and McKinlay, 1987). Similarly, other modes of data collection may create obstacles to participation

for otherwise willing respondents and result in a refusal; e.g., a mailed questionnaire to a respondent with vision impairment or difficulty holding a pen because of arthritis. In addition, frail older persons might have co-resident relatives who serve as protective gatekeepers and refuse on behalf of the elder (Herzog and Rodgers, 1988a). Some researchers have addressed these problems by use of mixed mode data collection techniques (Tennstedt and McKinlay, 1987; McKinlay et al., 1990) or proxy respondents (Chappell and Havens, 1980; Havens, 1980; Shanas, 1962, 1968; Tennstedt and McKinlay, 1987; McKinlay et al., 1990).

Most researchers compare the characteristics of respondents to those lost through attrition (Atchley, 1969; Baltes et al., 1971; Gilmore, 1975; Gordon et al., 1959; Hall et al., 1972; Maddox, 1962; Markides et al., 1982; Palmore et al., 1979; Powers and Bultena, 1972; Reeder, 1960; Riegel and Riegel, 1972; Riegel et al., 1967, 1968; Siegler and Botwinick, 1979; Wilson and Webber, 1976). However, it is also important to distinguish the different types and reasons for attrition, since they are reported to have a different impact on the representativeness and quality of the data. For example, in analyzing non-participation in a longitudinal study, Norris (1985) concluded that dropout of the "disinterested" did not affect the quality of the data nor the representativeness of the sample, whereas dropout because of disability had a significant impact.

Within the context of a longitudinal study of a representative sample of persons age 70+, the extent and nature of refusals at the first of three follow-up interviews are examined to answer the following questions:

- Is refusal to participate related to the respondent's age, gender, or functional status?
- Are efforts to convert refusals to continued participation effective? With any specific subgroup(s) of respondents?
- How does the use of proxy respondents influence study participation?

Therefore, in addition to investigating correlates of participant non-response in this sample of older people, a primary objective of this study is to assess the effect of various field procedures to minimize attrition by refusal.

STUDY DESCRIPTION AND FIELD METHODS

The Massachusetts Elder Health Project is a longitudinal study of older people to investigate their use of informal care and/or formal services in response to development of disability and associated needs for assistance with daily living activities. At baseline (1984-85) a geographically stratified random sample of 5855 individuals age 70+ was drawn from local census lists in 19 cities/towns in eastern Massachusetts. A three-stage field design was used to collect baseline data. First, the 10-item HRCA Vulnerability Index (Morris, Sherwood and Mor, 1984) was administered by mail to screen the sample for functional disability. With telephone and in-person follow-up for nonrespondents (31.5% of respondents), a response rate of 87.6% was achieved, yielding 788 disabled or frail older people and 3394 non-frail persons. Then the frail respondents were recontacted for a telephone interview (RR=80.3%) with in-person

interviews conducted as necessary (6.5% of cases), usually for hearing impairments. The final stage involved telephone interviews with the primary informal caregivers identified by these frail elders. The 3390 non-frail elders received no further contact beyond the initial screening questionnaire.

The field design for follow-up 1 in 1988-89 is displayed in Figure 1. All 4022 elder respondents (frail and non-frail) were recontacted with an introductory letter and project pamphlet, to remind them of their participation four years earlier, and then were telephoned for a interview. Refusal to continue participation at this point was considered an "initial refusal" and a temporary disposition. Reason for this refusal was obtained by the interviewer and entered into the data management system.

Active efforts were made to convert these initial refusals into continued participation using the following protocol:

- A 3-month hold period prior to the refusal conversion attempt was instituted to allow recovery time for respondents who were temporarily ill or experiencing a stressful situation.
- A special refusal conversion letter with a handwritten note speaking to the importance of their continued involvement was mailed. The envelope was personalized by means of a handwritten address and a stamp rather than postage meter, and another project pamphlet was enclosed.
- Nonrespondents were then recontacted by telephone or in-person by a select group of specially trained, skilled

interviewers. In-person contact was done for all nonrespondents with non-published telephone numbers or if reason for initial refusal (e.g., hearing impairment) was considered a factor which might interfere with completing a telephone interview. Each interviewer was skilled in explaining the purpose of the study in a clear, easily understood manner and attempted to address the reason for the initial refusal in this contact.

Continued refusal to participate at this point was considered a final refusal disposition.

Definition of Refusal Rate

In these analyses, the refusal rate was calculated as follows:

$$\frac{\# \text{ final refusals}}{\# \text{ surviving, eligible respondents}}$$

Refusals could be by either the subject or a proxy. Since this paper addresses participant non-response and not study attrition in general, the number of baseline respondents who had died by the time of follow-up were not included in the denominator.

RESULTS

Initial Refusals

Of the 2952 surviving baseline respondents, 289 or 9.8% initially refused to participate at follow-up. Refusals by age (i.e., ≤ 85 , > 85), gender, and baseline functional status are presented in Table 1. Almost all (93.4%) of this group were non-frail at baseline. However, there were no statistically significant differences by age or gender between respondents and

initial refusals. The primary reason for initial refusal was disinterest (69.2%) which includes those who expressed a general antipathy to participating in surveys or refused to give out information on the telephone. Illness or general physical frailty was cited by 27.3% as the reason for refusal. Of the remaining respondents, nine persons (3.1%) reported current stressful situations as the reason (including death, illness, or nursing home admission of their spouse), and only one person claimed fear of crime as the reason for non-response.

Table 1 Here

Refusal Conversion: Final Refusals

Following the refusal conversion protocol described above, the final refusal rate was 5.6% (n=166) or a reduction of 42.6% as a result of conversion efforts. The majority of these refusals (n=115 or 93.5%) were converted by telephone contact, taking 5-6 calls (median: 4 calls) to obtain the interview. Average total time to convert a refusal (not including the interview) is therefore estimated at 15 minutes for an additional cost of about \$3.50 per case. The eight field visits required for refusal conversion obviously took more time since travel is involved. Estimating conservatively at three hours per case, cost of a field conversion was approximately \$50. Obviously, clustering visits to several respondents in a geographic area would minimize this cost.

As can be seen in Table 1, there were no significant age or gender differences between baseline respondents who maintained a refusal and those who completed the interview. Almost all final refusals (n=161; 97%) had been non-frail at baseline. However, as with initial refusals, at recontact, disinterest remained the most frequent reason for refusal (73.5%), and illness or frailty continued as the second most frequent reason (25.3%). However, 39% of disinterested baseline respondents and 40% of those citing illness or frailty as reason for refusal agreed to continue participation at second contact. Refusing because of stress was reduced to two respondents, and the respondent citing fear of crime agreed to participate.

Proxy Refusals

A final factor contributing to refusal rates is the more frequent use of proxy respondents in studies of the very old. While proxy interviews are used to collect data about older respondents who might otherwise be unable to participate, proxies can also refuse on behalf of the respondent. Although data presented to this point included proxy interviews, refusal rates for this group are examined separately to assess the impact of gatekeepers on sample representativeness.

The criteria for a proxy interview in this study included the following elder situations: hearing/speech impairment; aphasia/CVA related disability; mental retardation; organic impairment/Alzheimer's disease; mental illness; long-term physical illness (i.e., > 3 months).

Of the 267 attempted proxy interviews (9% of attempted interviews), the initial proxy refusal rate was 14.4% (n=37).

Only 10 proxy refusals or 27% were converted, resulting in a final refusal rate for proxies of 10.1%. Nine proxies stated the elder's illness or frailty as the reason for refusal, whereas 18 proxies claimed disinterest on the part of the elder -- or their own disinterest in being a proxy.

DISCUSSION

In contrast to other studies of participant non-response which have focused on the potential bias introduced by attrition (e.g., Goudy, 1976; Schaie et al., 1973; Norris, 1985; Herzog and Rodgers, 1988a), this study investigated the effect of specific field procedures to minimize drop-out by refusal, including the use of proxy respondents.

Respondents who initially refused reinterview at follow-up did not differ by age or gender from continued respondents. However, contrary to what might be expected, they were much more likely to be non-disabled rather than disabled at baseline. Similar to findings by Norris (1985), the majority of these initial refusals cited disinterest in the study. In fact, many claimed no recollection of their prior participation at baseline. Given the limited baseline participation of the non-disabled sample, this response four years later is understandable. However, without attempts to convert refusals for this group, study results might be biased toward the more disabled population.

Looking at the final non-respondents, it was with the group of initial non-respondents citing disinterest in the study that

the refusal conversion procedures were highly successful. Feedback from field interviewers revealed that many of these people, in addition to not remembering their prior participation, had not read the introductory letter and project pamphlet sent prior to the follow-up contact. Recontact, first by a second personalized letter, followed by telephone or in-person contact, impressed upon them our interest in interviewing them. The skills of the interviewers in explaining the purpose of the study and the nature of their participation, as well as in addressing the reason for the initial refusal, were critical to converting the refusal to a completed interview.

The practice of holding all initial refusals for 3 months before recontact was also effective, particularly for those experiencing an acute illness or stressful situation at time of first contact, almost 80% of these respondents agreeing to participate at recontact. It may have also contributed to successful conversion for some cases citing disinterest in that the time of initial contact may have been inconvenient and disinterest or general antipathy toward surveys was the easier reason to give for refusal.

The refusal conversion protocol used in this study was less effective with proxy-refusals than with self-refusals. Looking at the final refusal rate for all respondents (i.e., self and proxies), proxies accounted for 16.3% of the total final refusals, whereas the number of proxy interviews was 8.6% of completed interviews. That is, the refusal rate of proxy respondents was almost twice the rate of their participation. Similar to older respondents themselves, most of the proxy

respondents claimed disinterest as the reason for refusal. The elder's illness or disability was not a common reason for refusal by proxy (i.e., only nine cases). Our experience indicates that family members of more disabled elders are not that likely to refuse participation on behalf of the elder, but rather are quite willing to complete proxy interviews. Two-thirds of 240 proxy interviews in this study were conducted because the elder was too frail, bedridden, or cognitively impaired. Therefore, while family members may indeed serve as gatekeepers and block access to other household respondents, these data suggest that this is not necessarily the case with disabled or frail older people. Rather, use of proxy respondents may ensure inclusion of disabled elders who might be unable to participate in the study and therefore minimize attrition of those respondents whose non-response might contribute to biased results in some studies. However, the higher refusal rates for proxy respondent points out the importance of selecting at baseline contact a proxy who has the knowledge regarding the elder required for a study and therefore is more easily convinced of the relevance of their participation. These findings also suggest the importance of maintaining the proxy respondents' awareness of the study between points of contact in a longitudinal study as one would with the elder respondents themselves.

In summary, results from this study show that it is possible to retain the very old and very disabled in a panel study with appropriately designed field methods. The oldest-old were just as likely to continue participation as the younger old respondents. Similarly, the disabled at baseline were much less

likely than the non-disabled to refuse reinterview at follow-up. While the current disability status of the baseline non-disabled non-respondents could not be ascertained, it is not likely that most were more disabled at follow-up than the baseline disabled respondents. Further, with a final refusal rate of less than 6%, again the results are not likely biased.

A refusal conversion protocol such as described here was clearly effective in minimizing attrition by refusal. In designing and budgeting for this field work, appropriate time and resources should be planned to permit the additional required mailings, telephone calls, and field visits. Our experience shows that most of the conversions can be done by telephone at minimal cost. The yield from field visits was minimal, and since these visits can be considerably more expensive, should be undertaken only when most other attempts with refusal conversion are unsuccessful and minimizing attrition by refusal is critical to a study's response rate.

Figure 1
FIELD DESIGN FOR FOLLOWUP I

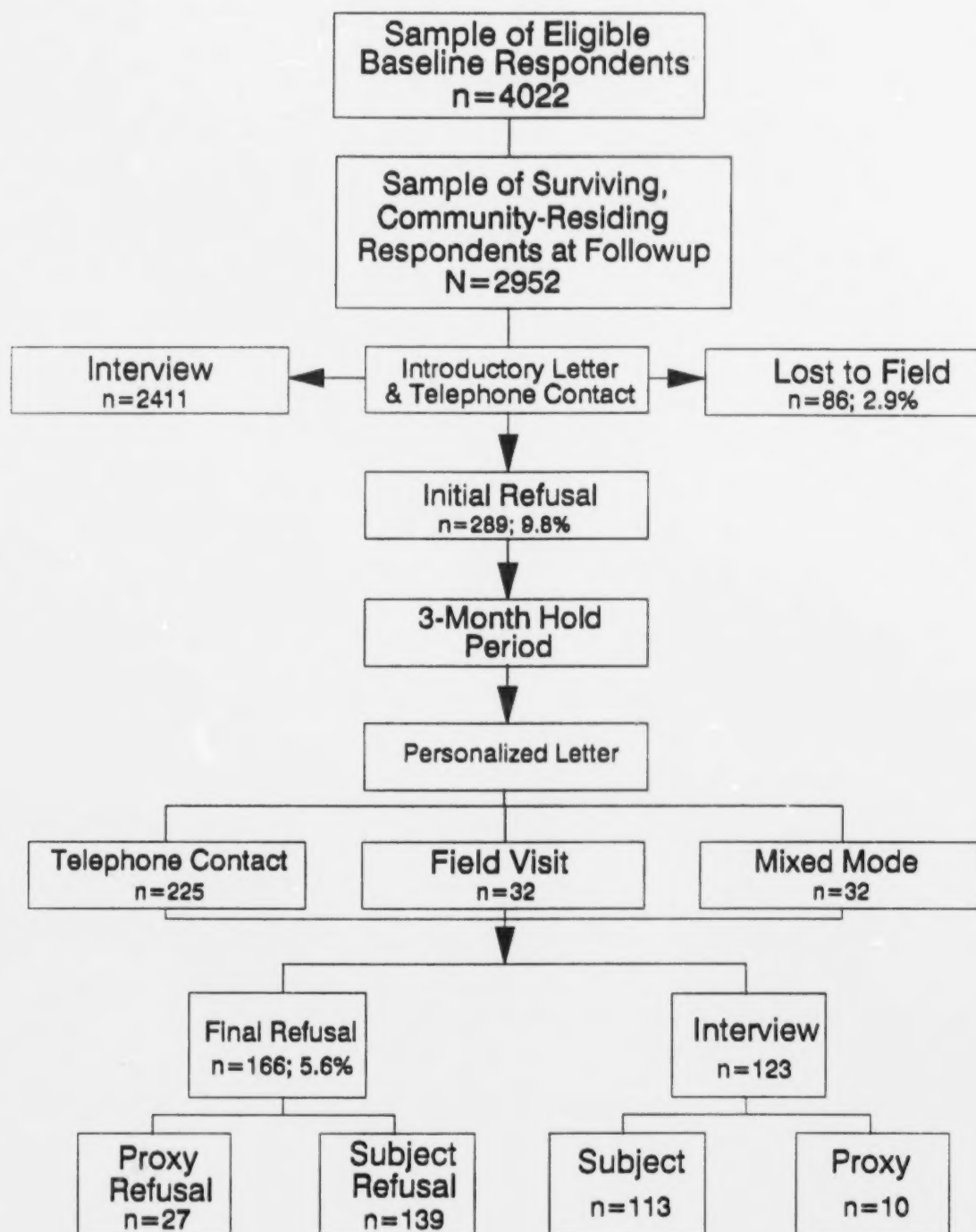


Table 1
ANALYSIS OF INITIAL AND FINAL REFUSALS
BY BASELINE AGE, GENDER AND DISABILITY STATUS

	Initial		χ^2 ^(a) (d.f.=1)	Final			Refusal Rate	χ^2 ^(b) (d.f.=1)
	Refusals	Respondents		Refusals	Respondents	Lost		
AGE								
≤ 85	233	2149	1.412	135	2247	68	5.5%	0.448
> 85	56	428		31	453	18	6.2%	
GENDER								
Male	106	818	0.757	62	862	29	6.5%	2.272
Female	183	1759		104	1838	57	5.2%	
BASELINE DISABILITY								
Disabled	19	273	4.588*	5	287	12	1.6%	9.917**
Non-Disabled	270	2304		161	2413	74	6.1%	

* $p \leq .05$

** $P \leq .01$

(a) Comparing initial refusals and respondents

(b) Comparing final refusals and respondents

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